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Yongyi Wang  
*Iowa State University*

Ana Arboleda  
*Iowa State University*

Mack C. Shelley  
*Iowa State University, [mshelley@iastate.edu](mailto:mshelley@iastate.edu)*

Donald F. Whalen  
*Iowa State University*

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# The Influence of Residence Hall Community on Academic Success of Male and Female Undergraduate Students.

## **Abstract**

Presents information on a study on the influences of gender and residence hall living on academic success of male and female undergraduate students in the U.S. Difference in patterns of involvement and interaction with peers and with the environment in their college community among males and females; Use of factor analysis and regression model in the study; Significance of self-assessment of academic progress in academic success.

## **Disciplines**

Family, Life Course, and Society | Gender and Sexuality | Higher Education | Models and Methods | Political Science

## **Comments**

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# The Influence of Residence Hall Community on Academic Success of Male and Female Undergraduate Students

Yongyi Wang

Ana Arboleda Mack C. Shelley, II

Donald F. Whalen

IOWA STATE UNIVERSITY

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## INTRODUCTION

The influences of gender and residence hall living on academic SUCCeSS have been studied separately in previous research. Gender has been found to be a positive predictor of academic performance; women tend to earn higher grades than do men (Astin, 1971, 1993). Residence halls have been shown to contribute to higher levels of faculty-student interaction and peer support, better academic and social integration, greater satisfaction and commitment, and higher college retention for students living in residence halls than for their off-campus counterparts (Blimling, 1993; Pascarella, 1980; Pascarella & Terenzini, 1991). However, few studies have examined the link between gender and residence hall experiences as an influence on academic SUCCeSS. This study fills that gap in the research literature by examining differences between male and female residence hall students regarding how the characteristics of their residence hall environment, social interaction, and other

demographic variables serve as predictors of their academic SUCCeSS.

## Gender and Academic Success

After controlling for academic background and high school grades, ability in the student's area of study becomes a major predictor of academic success (Astin, 1971). Variation in cognitive abilities also has been related to gender differences. Women Usually do better than men on verbal tasks (Maccoby & Jacklin, 1974) and on activities that involve attention and planning (Naglieri & Roiahn, 2001), whereas men outperform women on tasks that involve spatial representation and mathematical relationships (Geary, 1996). In addition to the fact that women tend to earn higher grades than men (Astin, 1971, 1993), women tend to select majors that are vocationally linked. Thus, women are influenced by environmental and social characteristics that emphasize their vocational interests, while the same effect is not necessarily true for men (Knox, Lindsay, & Kolb, 1992). Osterlind, Pascarella, and Pierson (2001) indicated that, although they earned higher grades, women retained less core subject information than did men, as measured by the College Basic Academic Subjects Examination.

Students' involvement with their collegiate environment impacts their learning and development (Moore, Lovell, McCann, & Wyrick, 1998). However, because of different gender preferences, males and females have different patterns of involvement and interaction with peers and with the environment in their college community. Males' interest in their environment allows them to experience a greater sense of community than is true for women (Chiricosta, Work, & Anchors, 1996). For women to develop a sense of community, and probably thereby to enhance their level of involvement, they expect a more stable environment and set of interpersonal relationships. Men do not struggle as much as women do with a frequently changing environment (Chiricosta et al., 1996), which is common in the residence hall community.

Students' interactions with peers and their exposure to a social network reinforce

higher aspirations and goals (Pascarella & Terenzini, 1991). However, different types of student involvement and social interaction may influence the learning experience and developmental experiences differently (Moore et al., 1998). Men and women have different styles of interacting with their environment (e.g., residence halls and peers), and thus also have different paths for learning from daily experiences with their respective communities.

The residence hall community affords a particular environment that provides students with more social interaction with peers and faculty (Pascarella & Terenzini, 1991); likewise, it provides comfort that may facilitate students' integration into academic activities and learning experiences. Gender differences are observed regarding students' integration with their community and academic environment; women's integration tends to be more social, while men's integration tends to be more academic (Pascarella & Terenzini, 1991).

Given these findings, it is expected that the characteristics of and patterns of social interaction among residence hall students will be predictive of their academic performance. These characteristics may have a different effect on women's and men's academic performance.

## METHOD

### Participants

The population for this study consists of undergraduate students living in residence halls at a large Midwestern university. The population accounted for 37% of all the undergraduates at the institution. Undergraduate residence halls consisted of 138 living units in 16 buildings called houses (i.e., floors, wings, or a combination of both), each accommodating from 20-70 residents. A part-time resident assistant (RA) was assigned to each house in a building, and a fulltime professional hall director (HD) supervised all RAs for the building.

## Survey Instrument

The university's Institutional Review Board approved the survey instrument and procedures for its administration. The survey was administered in late October 2001 to a 25% sample of residence hall students ( $n = 1,179$ ). HDs and RAs distributed the surveys with a cover letter explaining the purpose of the survey. Questionnaires were enclosed in pre-addressed envelopes, to allow students to return their completed survey in confidence by sealing the envelope. Responses were recorded on an optical scan sheet. Incentives were used to achieve a return of 1,186 surveys (66.7%).

The student's university identification number allowed matching demographic and academic information from university files to be obtained. Sections of the survey questions sought students' attitudes toward their RA, house executive officers, hall director, and the house atmosphere. Other questions solicited information on students' residence hall involvement, study habits, faculty involvement, alcohol and cigarette use, employment and volunteer involvements, and financial indebtedness.

Usable surveys complete with the identification number were 1,109 (62.3%). Demographic variables included gender, ethnicity, in-state or out-of-state residency, classification, and college of enrollment. Fall 2001 cumulative grade point average (GPA) was used to measure academic performance.

### Sampling Frame

The respondent sample was comprised of 52% males, 90% majority, 72% in-state, and 66% freshmen, 22% sophomores, 8% juniors, and 4% seniors. These numbers were very similar to those of the actual residence hall population: 55% male, 82% majority, 68% in-state, and 64% freshmen, 21% sophomores, 8% juniors, and 5% seniors. Undergraduates were enrolled in seven colleges: Liberal Arts and Sciences (33%), Engineering (29%), Business (12%), Agriculture (10%), Design (8%), Education (6%), and Family & Consumer Sciences (2%).

Residence hall buildings are divided into subgroups called houses (floors or wings) that accommodate from 20-70 students. Many participants (82%) lived in a coeducational residence hall, and 22% lived in a coeducational house. Most respondents lived in houses that voted to be smoke-free (94%). A few chose to live in a single room (17%), an alcohol-free house (3%), or a quiet house (5%); 9% had changed roommates during the fall semester; and 39% said they worked either part-time or full-time.

The fall 2001 average values of GPA for women, by classification, were: freshman, 2.79, sophomore, 2.99, junior, 3.06, and senior, 3.25. The same average GPAs for men by classification were: freshman, 2.63, sophomore, 2.81, junior, 2.97, and senior, 3.15. Although for each classification female students consistently outperform their male counterparts, there was a similar steady increase in GPA as both genders progress toward graduation. Overall, majority women (average GPA = 2.90) performed better than minority women (average GPA = 2.51); and majority men (average GPA = 2.7) outperformed their minority counterparts (average GPA = 2.44).

## Factor Analysis and the Regression Model

To identify the underlying factors, or latent constructs, that explain interrelationships among the survey items, factor analysis was conducted on key survey questions that shared a common measurement scale and topic. The first factor analysis was conducted on house feedback items related to student satisfaction with their RA, house cabinet, connection with hall director, academic and social environment, and academic progress. A second factor analysis was based on a group of questions related to students' study habits. Another group of survey questions, focused on residence hall involvement, was used to conduct a third factor analysis. In each case, principal components extraction was followed by varimax rotation with Kaiser normalization (Tabachnick & Fidell, 2001, pp. 663-664). Reliability analysis was undertaken subsequently, to determine the strength and

consistency of the correlations among the items that loaded strongly on each factor. Although some of these factors have only modest reliabilities, all of them are retained for use in subsequent statistical analysis because each conveys a unique component of the residence halls' environment.

Six factors were obtained from the house feedback questions. The factors, with their assigned labels and factor loadings for each item, and reliabilities (Cronbach's alpha values) for the set of items loading highly on that factor, were:

1. Satisfaction with house resident assistant had high loadings on: (a) RA is knowledgeable of campus and community services (.77), (b) RA shows enthusiasm for job (.77), (c) RA promotes respect of individuals' differences (.75), (d) RA encourages relations with all types of people (.75), (e) RA enforces policies appropriately (.75), (f) RA follows residence hall rules and regulations (.74), (g) RA is good at directing academic help (.73), (h) Resident feels comfortable approaching RA confidentially (.72), (i) RA is available in the house (.70), (j) RA works well with house cabinet (.69), (k) RA has tried to get to know resident (.68), and (l) RA encourages residents to be responsible for their actions (.67) (Reliability = .86).

2. Satisfaction with house cabinet had high loadings on: (a) Cabinet members respect house members (.80), (b) Cabinet works well together (.79), (c) Cabinet members build house community effectively (.75), (d) House meetings are run effectively (.70), and (e) The cabinet plans activities considering the entire house (.70) (Reliability = .86).

3. Connection with hall director had high loadings on: (a) Resident knows how to reach hall director (.87), (b) Resident knows hall director (.84), and (c) Hall director knows resident (.76) (Reliability = .79).

4. Academic comfort had high loadings on: (a) Resident studies mostly in residence (.65), (b) Resident is able to study in the residence halls (.64), (c) Resident has satisfactory relationship with roommate (.61)

), (d) Resident feels comfortable living in house (.53), and (e) Resident confronts those who adversely affect him or her (.37) (Reliability = .63).

5. Social environment had high loadings on. (a) Resident knows most people in house (.78) and (b) Individuals and their beliefs are respected in the house (.58) (Reliability = .62).

6. Academic progress had high loadings on. (a) Resident is satisfied with academic progress this semester (.84), and (b) There are enough activities in the house (.46) (Reliability = .36).

Three factors were extracted from questions related to students' study habits. The factors, with their assigned labels, factor scores, and reliabilities, were:

1. Group study had high loadings on: (a) Resident prefers to study with friends (.83), (b) Resident prefers to study with others in the same major (.80), and (c) Resident prefers to study with other house members (.77) (Reliability = .73).

2. Quiet study had high loadings on: (a) Resident prefers to study in university library (.82), and (b) Resident prefers to study in residence hall quiet areas (.71) (Reliability = .44).

3. Solitary study had high loadings on: (a) Resident prefers to study alone (.85), and (b) Resident prefers to study in own room (.76) (Reliability = .48).

Finally, a single factor, residence hall involvement, was extracted from questions related to residence hall involvement. This factor had high loadings on: (a) Resident attends house programs and activities (.80), (b) Resident interacts informally with house members (.75), (c) Resident participates in house intramurals

(.67), (d) Resident attends house meetings (.66), (e) Resident studies with others in house (.65), and (f) Resident leaves door open (.61) (Reliability = .77).

Fall 2001 GPA was used as the dependent variable in the regression model. The data set was split by gender, to provide parallel models of student academic achievement for men and women separately. Backward elimination model selection was employed; both subsets begin with the same full model, with predictor

variables in either model having the highest p-value deleted at each successive step until all remaining predictors met the criterion for staying in the model ( $p < .05$ ). Initial analysis used 43 independent variables. (Results of this initial model are not provided there, due to space constraints. Table 1 presents significant predictors from the original list of 43 variables.) Demographic variables included in this initial full model included: (a) ethnicity (majority), (b) instate residency, (c) sophomore classification, (d) junior classification, (e) senior classification, and membership in the colleges of (f) Agriculture, (g) Design, (h) Education, (i) Engineering, (j) Family and Consumer Science, and (k) Liberal Arts and Sciences. Freshman classification and membership in the College of Business were eliminated from the regression model to avoid redundancy as required by regression. Each of these variables was measured as a dichotomy, with the value of 1 indicating presence of the trait and 0 indicating absence of that trait.

The factored attitudinal variables included in the full model were: (a) satisfaction with house resident assistant, (b) satisfaction with house cabinet, (c) connection with hall director, (d) academic comfort, (e) social environment, (f) satisfaction with academic progress, (g) residence hall involvement, (h) group study, (i) quiet study, and (j) solitary study.

Other variables that may contribute to academic SUCcESS, and therefore were included in the full model, were: residence in (a) a quiet house, (b) a same-sex building, (c) a smoke free house, (d) an alcohol-free house, (e) coeducational housing, (f) a single room, and (g) the number of interactions with the RA during the semester; in addition to (h) number of hours spent in house each day not sleeping; (i) judgment of noise level in house; (j) roommate change during the semester; (k) number of hours per day spent studying; (l) frequency of academic conversations with peers; (m) frequency of academic conversations with faculty; (n) drinking behavior during the past year; (o) smoking behavior during the past year; (p) part-time or full-time employment; (q) hours per week volunteering for community service; (r) hours

per week volunteering in clubs or organizations; (s) amount resident has borrowed for educational loans; (t) amount of debt resident has in addition to educational loans; and (u) high school rank.

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## RESULTS

Table 1 presents the final reduced models for females and males, respectively. Only three variables were significant predictors of academic performance for both genders: (the factor) measuring satisfaction with academic progress, amount borrowed for educational loans, and high school rank. For both females and males, high school rank was the single best predictor of variation in student performance and was positively correlated with GPA, as measured by standardized regression coefficients ( $Beta = .485$  for males,  $.441$  for females). As noted by the significance of the academic progress factor ( $Beta = .220$  for males,  $.256$  for females), students who were more satisfied with their academic progress were more likely to perform better academically. However, students who borrowed more for educational loans tended to receive lower GPAs as shown by that variable ( $Beta = -.199$  for males,  $.075$  for females).

Similarly (see Table 1), significant predictors unique to females as noted by the significance of the  $t$  statistics and asterisks included ethnicity, classification as a senior, (factored) satisfaction with social environment, (factored) quiet study, residency in a quiet house, drinking behavior during the past year, and amount of debt the student has in addition to education loans. Specifically, for females, majority students, senior students, and women who liked quiet study, lived in a quiet house, and considered their house to be noisy tended to achieve better GPAs. On the other hand, women who were more satisfied with the social environment in the residence hall, drank more, and had more debt in addition to education loans were more likely to receive lower term GPAs. The proportion of variation

in GPAs among females explained ( $R^2$ ) in the reduced model was  $.506$  (adjusted  $R^2 = .493$ ).

Significant predictors unique to males included: classification as a junior, (factored) residence hall involvement, residency in a same-sex building, and smoking behavior in the past year. For males, students with junior classification and living in a same-sex building performed better academically; men who were more involved in residence halls and who smoked more tended to get lower term GPAs. The value of  $R^2$  in the reduced model for males,  $.342$  (adjusted  $R^2 = .331$ ), is markedly lower than the corresponding result for females. To test how well the coefficients in the reduced models would generalize to other samples, such as studies conducted at other

**TABLE 1**  
**COEFFICIENTS FOR FEMALES' AND MALES' REDUCED REGRESSION MODELS**

Variables	Females				Males			
	B	SE	Beta		B	SE	Beta	
(Constant)	0.526	0.254		2.072*	1.263	0.187		6.754***
Ethnicity: Majority	0.470	0.100	0.167					
Classification: Junior					0.295	0.128	0.095	2.304*
Classification: Senior	0.600	0.256	0.085	2.346*				
Factor: Social environment	-0.118	0.030	-0.142	-3.962***				
Factor: Academic progress	0.225	0.032	0.256	6.947***	0.194	0.036	0.220	5.351
Factor: Residence hall					-0.04	0.035	-0.122	
Factor: Quiet study	0.086	0.030	0.103					
Quiet house	0.566	0.202	0.102					
Same-sex building					0.301		0.118	
Judgment of noise level in house		0.076	0.093					
Description of resident's drinking behavior during the past year	0.198							
Resident's smoking behavior	-0.091	0.025	-0.134	-3.670***				
during the past year					-0.076	0.034	-0.092	-2.216*
Amount resident has borrowed for educational loans	-0.035	0.017	-0.075	-2.036*	-0.054	0.019	-0.119	-1.861**
Amount of debt resident has in addition to educational loans	-0.064	0.028	-0.086	-2.324*				
High school rank	0.023	0.002	0.485	9.77***	0.022	0.002	0.441	5.53***

Notes. The dependent variable is Fall 2001 GPA. For females,  $R^2 = .506$  and Adjusted  $R^2 = .493$ ; for males,  $R^2 = .342$  and Adjusted  $R^2 = .331$ .

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

comparable academic institutions, crossvalidation checks (Tabachnick & Fidell, 2001) were conducted for males and females separately. This involved dividing the entire sample randomly into two parts, running backward regression on an 80% sample, predicting GPA for the remaining 20% using the regression coefficients generated from the 80% sample, and finally finding the value of  $R^2$  for the smaller sample by squaring the correlation between predicted GPA and actual GPA. For the smaller (20%) samples,  $R^2 = .450$  for females and  $R^2 = .283$  for males. By comparison, the  $R^2$  value for the larger (80%) samples is .514 for females and .348 for males. No large discrepancies were found between the  $R^2$  values for the smaller and larger samples for either females or males. This finding suggests the broader

analysis to other comparable research contexts.

## DISCUSSION

From the many student demographic characteristics, as well as the environmental academic, and residence hall involvement predictor variables, it is somewhat surprising that only a limited number of factors made a statistically significant contribution toward academic SUCCESS. The separate analyses for men and women proved to be highly informative, as they reveal important commonalities across gender regarding which variables do play a role in predicting student achievement, but other predictors unique to either gender also were



As expected (Astin, Korn, & Green, 1987), high school rank was the single strongest predictor of academic success for both men and women. Few demographic

variables were found to be statistically significant predictors, and were for men; this discrepancy may be explained by the greater divergence in GPA between majority women and minority women (.39), compared to the gap between majority men and minority men (.33). Controlling for all the other significant predictors retained in the reduced models, men performed best in their junior year, while women performed best in their senior year. Note that this finding from the reduced multiple regression models is not consistent with the monotonic increase in GPAs for both genders reported previously in the discussion of the sampling frame for the entire undergraduate population. Presumably, the partial correlations measuring relationships among the variables remaining in the reduced model demonstrate that the effects for men of senior classification were washed out by other considerations, with males' academic performance attenuated during their final year compared to what their senior-year performance would have been absent other influences. This research does not say why these gender differences occur, thus this question offers good opportunities for future research. It may be that men are looking for a respite from competitive academic pursuit prior to moving on to the next stage of their life, while women may feel the need to perform strongly in the academic arena in their final undergraduate year to enhance their ability to compete with men during their next stage in the work world or in graduate school.

For both men and women, self-assessment of academic progress seemed to be a good predictor of their true academic success, although the inclusion of their rating of the number of house activities in the self-assessment factor is noteworthy. Students who rated themselves better academically also seem to be more satisfied with the activity level in their house.

Although the reasons for the finding are not known, women who knew fewer people

in the house and were more likely to disagree that individuals and their beliefs were accepted in the house did better academically. Whether isolation results in

not common to both genders. Majority status was a significant predictor for women, but not more academic focus or whether higher ability causes the desire for more isolation is an interesting question that may be answered through future research. Perhaps these students simply preferred not to be distracted from their academic pursuits. Quietness also seemed to be a factor for women; those who lived in quiet houses, and who preferred to study in quiet areas or at the library, did better academically. Women who were less satisfied than were other women with the noise level in their house also did better

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academically, possibly because they sought to study elsewhere. Alternatively, this finding may be the result of such women being able to handle a higher noise level because their generally higher GPAs and better study skills may provide them with more resilience. These relationships with GPA were not true for men, but men who were more involved in house activities were less successful academically. However, for both genders, studying alone, a preference for studying in one's own room, and group study had no statistically perceptible influence on GPA.

House types had no relationship with GPA for either men or women, except for residence in a same-sex building. Men living in a same-sex building were more likely to do better academically, possibly because men who requested residence in a same-sex building were more serious about doing better academically and wanted to avoid the distractions of the opposite sex. Women who described themselves as drinking less during the previous year did better academically. It may be that women who drank less were more focused on their academics and hence performed better, or that more academically successful women did not wish to be distracted by alcohol. Men who described

themselves as smoking less during the previous year did better academically. Similarly, this result may OCCUR for males because men who smoked less were more devoted to their studies; or men who were more SUCCESSfUL academically saw little need for smoking as a means for socializing.

The relationship between debt and academic SUCCESS for both genders was particularly interesting. The more money borrowed for education loans the poorer the student's academic performance. For women, this was true also of debt, in addition to education loans. This finding underscores that being able to defer costs and to purchase what one wants does not help students do better academically. At the same time, however, there was no significant relationship between work and academic SUCCESS.

## CONCLUSIONS

Several important conclusions can be gleaned from this research. Academically successful women living in residence halls wish to focus more on studying than on their social environment. Ways might be found to include these women into the residential house community without pressuring them to become distracted with the social environment. Similarly, men should be encouraged to get involved in the residence halls ,but to balance their involvement with academic study.

Same-sex buildings seem to serve men better academically than they benefit women. Speculatively, fewer distractions from women being present may help men focus more successfully on academic pursuits. Academic advisors and parents may find it helpful to take this into consideration when making recommendations about campus living arrangements for their male advisees and sons who may find academics to be challenging.

Finally, the negative relationship between academic achievement and education debt for both men and women is noteworthy. This finding demonstrates that incurring more education loans to defray the need to work while in school or to make life more comfortable during that time does not actually help students academically. Of further interest

is the negative relationship between other debt and academic success for women. This finding underscores that debt generally is not desirable because associated interest tends to compound the debt burden and may cause anxiety regarding how and when the debt must be repaid.

Several implications for housing professionals can be drawn from this research. Not all students benefit from social involvement in the house. Women who are not as social in the house community and prefer to study outside the house environment or in a quiet house perform significantly better. Buildings without the distractions of coed housing might be better for men who wish to do better academically. Although residence staff members want to build a residence hall community, they should be conscious of the academic needs of students to limit their house interactions.

Staff also might educate students on financial planning. Many students may feel that consuming now might make them more comfortable and better able to focus on studying, when in reality debt seems to have the opposite effect.

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For additional information, contact Donald F. Whalen, Coordinator of Research and Assessments, Department of Residence, Iowa State University, Ames, IA 50012.